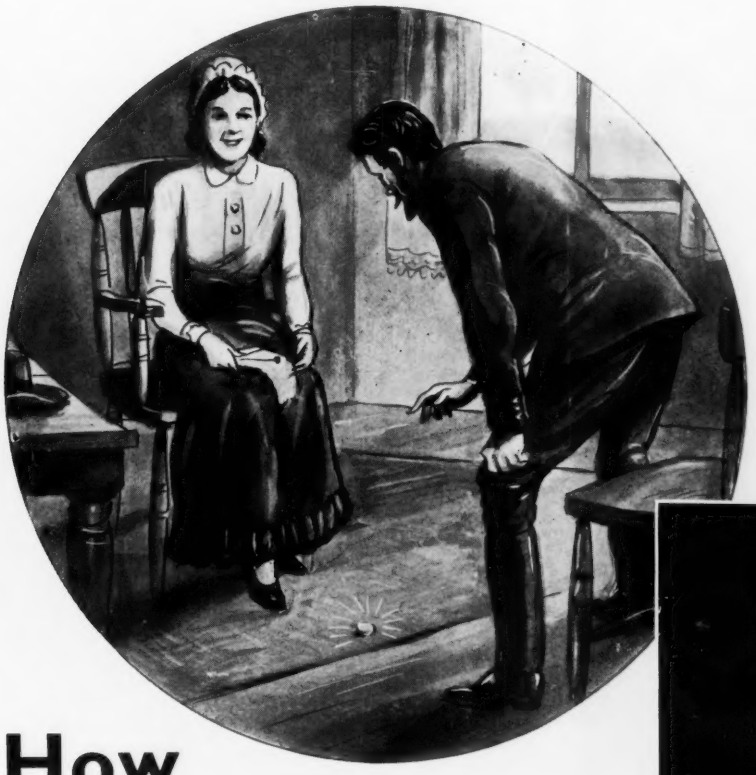
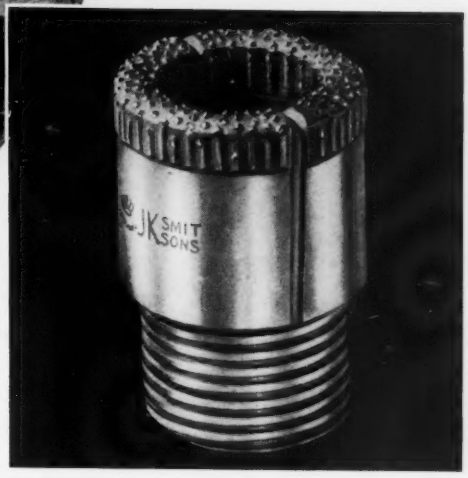
The Mining Journal

Established 1835 — Railway & Commercial Gazette

Vol. CCXLIII No. 6213 — LONDON, SEPTEMBER 17, 1954 — PRICE 8d.





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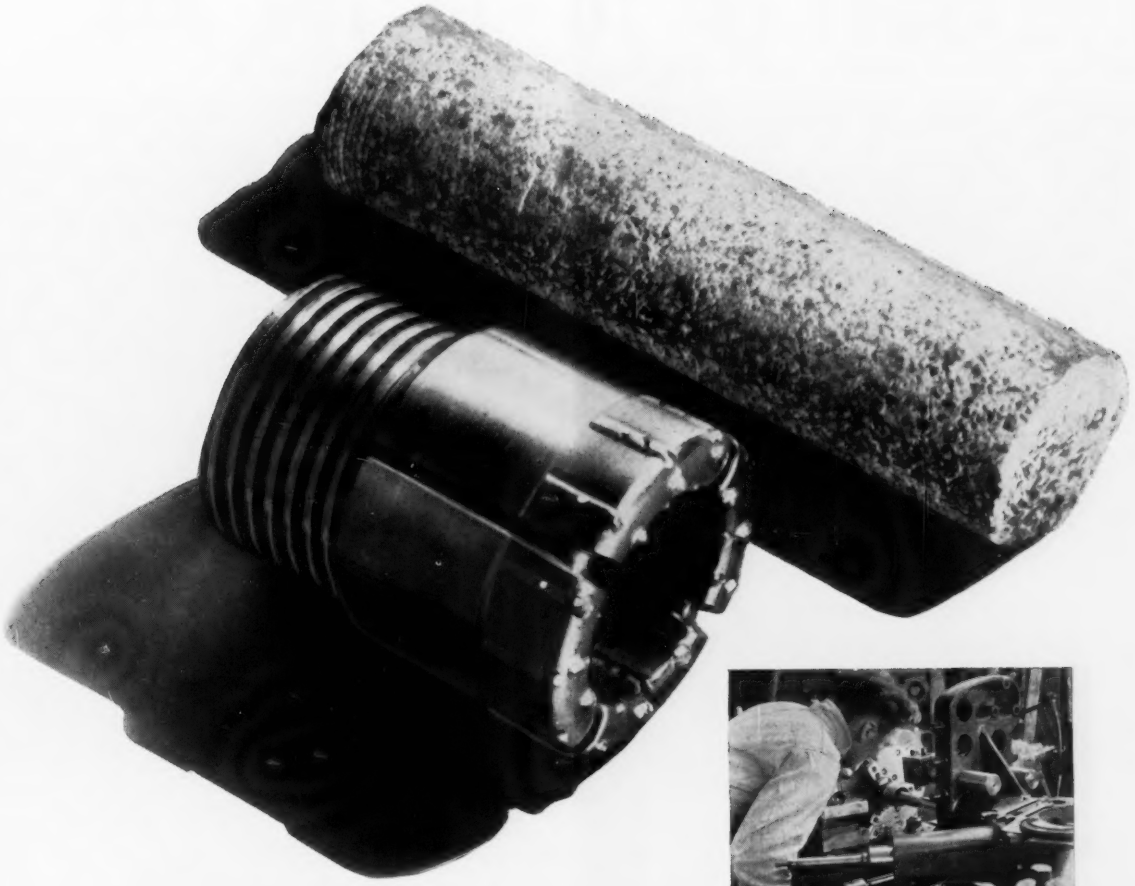

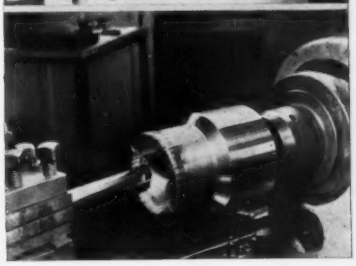

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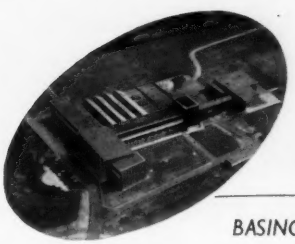

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Published by The Mining Journal Ltd., at 15 Wilson Street, Moorgate, London, E.C.2. MONarch 2567 Subscription £2 per annum

NOTES AND COMMENTS

Labour Shortage Causes Decline in U.K. Coal Production

That there should be criticisms when the pits were not satisfying the demand for coal and foreign coal was being imported into the country, was only natural said Sir Hubert Houldsworth, chairman of the National Coal Board, when he opened the N.C.B.'s Summer School at Oxford at the end of last week. While criticism, constructive and useful, would be heeded he deprecated unjust and ill-informed criticism, reminding his audience that more flies were caught by honey than by vinegar.

Although the U.K. coal mining industry had not achieved all that was reasonably hoped for, he said that it was wrong to say that nothing had been accomplished. The biggest drawback at present experienced was the shortage of man-power in the proper places. Indeed, this was one of the chief reasons why the objective of a 2½ per cent increase in the annual coal output in 1954 had not been realized. For example, there was a shortage amounting to about 12,000 men in the West Midlands and Yorkshire, and in other coalfields there were local pockets of shortage. While every effort was being made to secure the additional man-power, through the assistance of the Ministry of Labour, by advertising and by the provision of houses, the shortage has not been made up satisfactorily and was causing great anxiety. Yet the recruitment of those between 21 and 30 years of age had exceeded wastage by nearly 1,200. The employment of adult labour, however, was not all that could reasonably be expected, as despite an increase in the total inflow of adult recruits by 35 per cent this year, because of wastage the overall decline had been 6,700.

Shortage of labour was not, however, the only brake on production this year. Open-cast output was down by over 600,000 tons compared with last year. The contraction of output in this sector could not be laid at the door of the N.C.B. An open-cast site could not be worked until the necessary permission had been given—which often meant considerable delay—and the flooded sites in the freak weather of recent weeks had also added to the difficulties of raising open-cast coal production.

Sir Hubert takes the view that people are more important than rocks, and attitudes more important than techniques, as indeed did Dr. D. M. Davidson whose remarks on a somewhat similar problem were the subject of comment in these columns last week. Looking into the future, Sir Hubert said that the N.C.B. must recruit personnel not only in sufficient quantity but also of the proper quality and that once that had been achieved their best services would only be secured if they were treated properly by the Board and by their immediate superiors. The standard of management must be improved as the importance of skilful management at the pit could not be overemphasized; consultation must be developed with enthusiasm; human relations at all levels must be bettered; the Board must keep abreast of the trend of thought and practice in other coal producing countries; and finally, it was essential to continue to experiment with new techniques and new machines.

Copperbelt Companies Hit by Railway Crisis

The shortage of haulage capacity in the Central African Federation's railway system has affected the key industries of the Rhodesias and its repercussions look like having an impact over a much broader field.

The present critical situation arises from the fact that in addition to difficulties such as the railway strike and the shortage of man-power, the railways have been attempting to move the record maize crop this year before the rains.

One of the most serious results arising from the shortage of haulage capacity has been the inability of the railways to move the Copperbelt companies' quota of coal from Wankie which can now produce 300,000 tons per month but is limited to about 230,000 tons because of the shortage. This has compelled the Copperbelt companies to resort to importing 10,000 tons of coal a month from the United States through Lobito Bay, and carried to Northern Rhodesia via the Benguela Railways. The landed cost of this coal is approximately £11 10s. per ton, which compares with a price of only 17s. per ton from Wankie. Moreover, the mines are losing an estimated £2,000,000 a year through having to burn wood instead of coal.

To meet the present crisis the Central African Federation cabinet ministers and mine representatives have decided on emergency measures which will involve diverting some rail traffic to road transport, re-organizing the coal distribution, cutting down on the use of non-essential railway carriages, and economizing in the use of coal and electricity.

While these drastic measures may provide some relief, there is little likelihood of a basic improvement in the present situation taking place before the end of March, 1955, as there have been long delays in the delivery of rolling stock and locomotives—ordered as long ago as January, 1952. That no early amelioration is looked for is reflected in the cabinet ministers' decision to urge the Northern Rhodesian copper mines to import more coal from the U.S. via Lobito.

Potential Sources of Selenium in U.K.

The possibilities of augmenting this country's supplies of selenium are currently being investigated in the U.K. by the Chemical Research Laboratory and are described in a booklet entitled *Selenium*, published by H.M.S.O. for D.S.I.R., at 1s. 6d. per copy.

Selenium, the semi-metal which has become increasingly important to the electrical industry in recent years, occurs with sulphide ores and the majority of it is obtained as a by-product of copper refining. In the electrolytic refining of copper a slime "anode slime' is formed which contains a fairly high proportion of selenium. The U.S.A. is the biggest producer of selenium, all of it from this process, but its supplies are still not enough for its own industry and it has to import more of it. Most of Great Britain's supplies of selenium come from Canada, again from copper refining plant. There are small quantities of selenium on the market which come from Sweden and Japan, but these are high priced compared with the Canadian selenium.

In Great Britain iron sulphide, or pyrites, is used in the manufacture of sulphuric acid. Like copper sulphide it contains selenium. Flash roasting of pyrites is one of the processes used to avoid utilizing sulphur as a raw material. The process is fairly new but its use is expanding and it may produce quantities of selenium which would be worth recovering. The selenium is concentrated in the wastes, dusts and muds from the roasting plant. Little is yet known of the economics of recovery but waste materials from three plants have been examined at the C.R.L. The materials from one plant contain sufficient selenium to justify the hope that recovery would be worth while. As in copper refining the problem is to develop a method which will not interfere with the primary object of the process and be cheap enough and simple enough to make selenium production pay.

Diamond Drilling Equipment Available for India

The essential point made by our Indian correspondent in a note in these columns last week was that a lack of diamond drills was holding up diamond mining operations in the Panna area, Andhra State, India.

Indeed, his statement that efforts to secure diamond drill units from overseas sources had met with little success has produced a welcome and immediate reaction from British manufacturers of diamond drilling equipment, some of whom have not been slow to point out to *The Mining Journal* that there are no difficulties standing in the way of India obtaining diamond drills from this country. U.K. companies are ready, willing and able to supply diamond drilling equipment to India and are, in fact, doing so. Moreover, there is no shortage of materials, equipment or capacity in this country to deal with such demands.

Reports of difficulties in obtaining deliveries from abroad have very possibly been coloured by an understandable anxiety among diamond interests in Andhra State to establish an indigenous diamond tool industry. Panna diamonds are reported as being suitable for this purpose.

The Rhodesias

(From Our Own Correspondent)

Salisbury, August 20.

The erection of a refined copper casting plant has begun at Mufulira mine, Northern Rhodesia. The plant should be in operation by mid-1955, and it is estimated that production will reach 100,000 tons of refined copper per year. The plant will enable Mufulira to sell refined "tough pitch" or de-oxidized copper as wire bars, cakes and billets.

A further development on the Copperbelt is the announcement by Rhodesian Selection Trust that a cobalt treatment plant costing £500,000 is soon to be built at Ndola. The plant is expected to begin production in 1956 and will treat the cobalt output from Chibuluma, which thus becomes the second mine in Northern Rhodesia to commence economic production of cobalt. Estimated output of the new plant is 500,000 lb. per year. It will be recalled that earlier this year plans were announced to erect a £3,000,000 electrolytic copper refinery at Ndola.

The recently issued report of the Northern Rhodesia Mines Department refers to large scale prospecting in the Territory during 1953. This was largely due to the activities of the large mining companies, prospecting by individuals being on a smaller scale than previously. Local expenditure of the Northern Rhodesia mining industry was £38,141,134 during 1953, an increase on 1952.

THE RISCOM ADMINISTRATION

A complete overhaul of the Rhodesian Iron and Steel Commission's administration, operational and commercial arrangements is regarded as essential by the commission of inquiry which has just reported on its investigation into the workings of Riscom. The report states that the chain of management at the Commission lacked leadership to give direction and effectiveness to decisions. There had been lack of proper control of capital expenditure, and capital allocated for specific projects had not always been used for the specified purposes. Among it recommendations, the commission of inquiry says that Riscom should meet an annual demand of 10,000 tons for wire rod and wire products, but it should not at present consider tackling the rolling of light plates and sheets, as methods of sheet rolling were undergoing complete transformation. The report states that provided good management is secured and the improvements recommended are carried out, there is every reason to believe that the Rhodesian Iron and Steel Commission can secure the fullest possible development of the manufacture of iron and steel at costs competitive with present landed costs.

The new Riscom board is headed by Mr. S. M. Pechey, chairman of Barclays Bank in the Federation, and includes the chairman of the Electricity Supply Commission, the managing director of Wankie Colliery Co., Ltd., a prominent mining engineer and the chairman of a leading firm of engineers and founders. The Southern Rhodesia Parliament was told recently that the Commonwealth Development Finance Corporation would probably provide £1,000,000 in additional capital to complete present development at Riscom, and to increase production within the economic range of the existing mills.

Gold output in Southern Rhodesia during June was remarkable in that it represented the highest monthly total for five years. Some 47,317.75 oz., value £588,792, were produced. In April, 1949, 47,367.57 oz. were recorded. The value of the Colony's mineral output during June was £1,607,517, compared with £1,491,917 in the previous month.

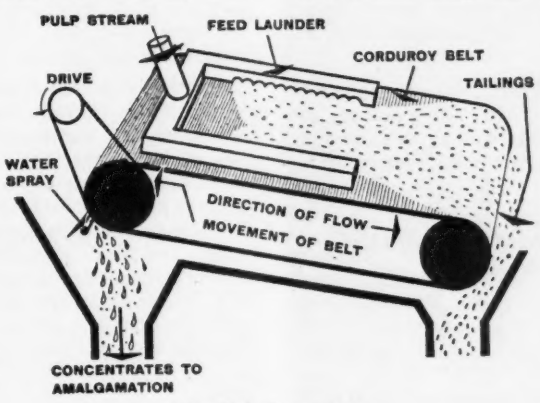
New Riffle Concentrator Belt Employs Ancient Principle of Corduroy Concentration

A new type of riffle concentrator belt has recently been introduced in the recovery plants of certain mines of the Anglo American Corporation of South Africa. The operation of the concentrator belt embodies a principle of great antiquity, and the modern development is brought into use at the tertiary stage of milling. The description of the new unit contained in the following article first appeared in *Optima*, Volume 4, Number 3, a quarterly review published by the Anglo American Corporation of South Africa.

A new type of riffle concentrator belt, which adapts the old-established method of recovering free gold from pulped ore by passing the pulp-stream over corduroy tables, has recently been introduced in the recovery plants of Brakpan Mines, Limited, Welkom Gold Mining Company, Limited, Western Holdings, Limited, and President Brand Gold Mining Company, Limited.

The use of this new concentrator, which combines the advantages of labour-saving, low-running cost and security against gold theft, is gradually being extended to other gold mines of the Anglo American Group.

The principle of corduroy concentration dates from antiquity: it had its most primitive application in the practice of laying down goat skins in the beds of rivers known to be carrying particles of gold in suspension. The gold particles, being relatively heavier than particles of sand and other detritus, tended to settle more rapidly, and were collected by the skins.



The Belt Concentrator

During the earlier days of gold-mining on the Witwatersrand, an embodiment of this same principle, in the form of the corduroy table, constituted one of the principal methods of gold recovery; and, even since the introduction of the cyanide process, corduroy tables have continued to recover a high percentage of the total gold yield of some of the older mines.

The merit of this method of concentration lies in the fact that it recovers, during milling, relatively large particles of free gold, if they are present. These coarser particles would take longer than fine particles to dissolve in a cyanide solution, and would thus retard this stage of gold extraction. It has always been recognized that there is a theoretical advantage in introducing into the milling circuit a process whereby the coarse gold present in the ore is made directly available for amalgamation and smelting, thus by-passing the cyanide treatment. This advantage is especially marked in rich mines, where high-grade ores frequently contain a large percentage of coarse gold.

DISADVANTAGES OF CORDUROY

The corduroy table is less extensively used in modern reduction plants for several reasons: for instance, the corduroy blankets must be changed frequently and washed by hand, thus demanding a relatively large labour force; the gold concentrates are exposed to theft; and an inconveniently large number of tables have to be installed to deal expeditiously with the large tonnages of ore that are milled nowadays in most plants.

During the last war, when corduroy cloth became difficult to obtain, rubber sheets were manufactured to simulate the riffled surface of corduroy. The equal effectiveness and greater durability of this material led the Metallurgical Department of the Anglo American Corporation to consider the practicability of a riffled surface in the form of a continuous rubber belt from which the gold might be washed automatically.

CONTINUOUS RUBBER BELT CONCENTRATION

Experiments were made, and the prototype of the present concentrating belt was introduced into the milling circuit—first at the Brakpan mine and later at Daggafontein. With improvements suggested by these tests, the new concentrator has now been installed at the Welkom, Western Holding and President Brand mines in the Orange Free State, and at Brakpan Mines.

The concentrator comprises a continuous rubber belt, 5 ft. wide and about 9 ft. long, passing round two rollers and inclined horizontally. The pulp stream is directed laterally on to the raised end of the belt, which moves continuously against the stream. A jet of water directed towards the underside of the belt washes off the gold collected in the riffles. The overflow from the belt goes back into the milling circuit, and the concentrate is pumped directly to the amalgamation plant. Each concentrating unit is completely enclosed, and the concentrate is not touched by hand.

The new concentrator is highly suitable for inclusion in the reduction circuits of mines in the Anglo American Group. The concentrator is brought into the tertiary stage of milling, and the pulp gravitates from the tertiary classifier to the belt concentrator, thus obviating the necessity for pumping. When installed in this particular circuit it has been shown by past usage that each unit is capable of treating, in 24 hours, pulp containing approximately 200 tons of solids.

A noteworthy advantage incidental to the introduction of this new piece of equipment is that osmiridium, the value of which is about three-and-a-half times that of gold, and which occurs in the ore in minute quantities, can be recovered currently. Formerly, a certain amount of osmiridium was recovered during the re-lining of ball and tube mills. This, however, constituted only a small proportion of the osmiridium present in the ore treated. The new belt concentrator has now made possible the systematic recovery of osmiridium with the subsequent result that a marked increase in osmiridium output has been shown.

Uranium Drilling on the Colorado Plateau, U.S.

The Colorado Plateau is the largest uranium-bearing area in the United States and two governmental agencies, namely the Atomic Energy Commission and the U.S. Geological Survey, are actively exploring the area for uranium-bearing ores. The following article describes briefly the economic and technical aspects of the drilling completed to the end of 1953 on the Plateau, and is the condensation of papers presented to the Drilling Symposium at the University of Minnesota in October last year by D. B. Hurley and M. E. Crew, chief and assistant chief respectively of the A.E.C. field engineering station on the Plateau, and A. E. Ross, chief engineer, Sprague and Henwood, Inc.

Within the overall objective of adequately assessing the uranium potential of the Colorado Plateau, United States, the purpose of drilling by the Atomic Energy Commission is threefold. Emphasis on any one of the three purposes is directly related to the fluctuations of current demand, and thus flexibility of operation becomes essential to meet these demands as they arise.

The three purposes of the A.E.C. drilling programme on the Colorado Plateau are as follows :

(a) To discover uranium of ore-grade, feasible of mining and delivery to existing mills.
(b) To discover reserves for proposed mills.
(c) To develop reserves in areas where private companies would not normally undertake exploration or exploitation activities.

To accomplish these three objectives, contracts on a competitive bidding basis are awarded for drilling projects of various footage scopes in locations within the Colorado Plateau area which are deemed favourable following geological reconnaissance.

ECONOMICS OF URANIUM AND DRILLING

Under the U.S. government's purchasing schedule the buying of raw ore ceases below the grade of 0.10 per cent U_3O_8, as it is not considered profitable to ship ore of an average tenor of less than 0.20 per cent. A reasonable assumption is that the average tenor of mill shipments on the Colorado Plateau may be in the neighbourhood of 0.25 per cent, which at the present purchase price and disregarding the initial production bonus is valued at $20.75 per ton for its uranium content. This ore will normally contain vanadium at approximately $5 per ton, bringing the total value of the ore to the region of $26 per ton.

A salient feature of the drilling programme already completed in the Plateau area is that the average cost of core drilling at the present time may sometimes almost equal the value of the uranium ore discovered. Until recently the average contract cost of core drilling has been in the range of $3 per ft., and to this expenditure must be added overhead and evaluation charges. A further important consideration is that of taxation, as all contracts let by the U.S. government are awarded only after competitive bidding. The considerable inroad made into profits by the demands of Federal taxation may equal as much as 82 per cent.

DRILLING PRACTICE

In general, drilling on the Colorado Plateau has been undertaken for exploration, development and investigation. Drilling for exploration purposes has particular reference to broad areas with widely spaced holes at 50 ft. to 300 ft. centres, and has usually been undertaken in areas where mining was well advanced.

Development drilling began from the need to encourage small mining operators to remain in areas where ore was showing signs of petering out in the mines. This type of operation comprises close spaced drilling on 25 ft. to 100 ft. centres being completed behind and adjacent to these mines. Investigative drilling is carried out in new areas where insufficient surface information is found by A.E.C. geologists to justify recommendations for full scale drilling. Widely spaced holes at 500 ft. to 1,000 ft. centres are drilled in such areas to complement the geological data compiled from surface observations.

IMPROVED DRILLING EQUIPMENT

In current operations on the Colorado Plateau 29 contract drills are in operation and it was anticipated that more than 500,000 ft. were drilled last year, with completed footage during individual months equalling or exceeding the complete drilled footage of 1949 (70,160 ft.).

New and improved drilling equipment and supplies have been developed to meet the varying conditions encountered on the Plateau, and during the last four or five years the type of drilling machine used there has changed considerably. Through various stages of development the type of drill rig finally evolved—as now in use—is a modified oil feed type hydraulically operated derrick mounted on a motor truck. The diesel engine replaced the petrol engine and in current experiments fluid drive mechanism is under examination. It is felt that with the possible development of a new operating technique the torque convertor will find its proper place on a layer drilling rig. The modern truck mounted drill rig as used on the Colorado Plateau has many variations.

When practicable, air is used as a cooling medium during non-coring operations and the pipe normally required is that used in standard drilling operations elsewhere in the United States. Coring bits are primarily diamond bits, while non-coring bits may be tungsten carbide insert drags, hard metal finger types or Tri-cone rock bits. Special reaming shells are frequently required in some of the formations encountered.

In summarizing the foregoing remarks, it may be said that drilling on the Colorado Plateau has been largely of the coring variety with holes ranging from EX to NX in size and from 100 ft. to 1,100 ft. in depth. In recent years some percussion non-core drilling has been completed to depths of about 200 ft. Rotary type non-core drilling has also been accomplished with rock bits $3\frac{7}{8}$ in. and $4\frac{1}{4}$ in. dia. as well as finger type bits BX and NX in size. Both water and air have been used as the flushing and cooling medium; water being employed primarily for coring and air primarily for non-coring.

The rapid development of drilling activity on the Plateau is indicated by the number of companies which entered the field as contractors during the latter portion of 1953. These included, Calumet and Hecla Inc., Anaconda Copper Mining Co., Tenn-Texas Corporation, Rare Metals Corporation of America, Vulcan Uranium Co., New Jersey Zinc Co., Vanadium Corporation of America, National Lead Co., National Uranium Corporation and others. Uranium occurs in the area chiefly in the mineral carnotite.

A Guide to German Wartime Non-ferrous Practice

During and immediately before the Second World War, the Germans found difficulty in maintaining supplies of certain non-ferrous metals which were essential to their manufacturing industries. Besides seeking substitutes, they were compelled to make the maximum use of scrap and to extract non-ferrous metals from low grade ores.

At the end of the war, teams of scientists from the various Allied powers visited Germany to investigate scientific developments in that country. They wrote reports of these visits, which have been published by H.M. Stationery Office as B.I.O.S., C.I.O.S. or F.I.A.T. reports, and brought back with them many original documents relating to research and development work.

In view of the present difficulties in maintaining supplies of non-ferrous metals and alloy steels, these reports and captured German documents have been reviewed by the Department of Scientific and Industrial Research and a Survey has been prepared giving short summaries of the more useful papers, published as report No. RMS—3, under the title *A Bibliographical Survey of German and Japanese experience in the Extraction of Low-Grade Non-Ferrous Ores and the Recovery of Non-Ferrous Metals and Compounds* (H.M.S.O., Price 3s. 6d. net). The Report deals with possible economies through recovery of waste materials and the extraction of low-grade ores, which might under normal conditions prove uneconomic.

VANADIUM FROM IRON ORES

The extent to which the recovery of non-ferrous metals was carried out in Germany is well illustrated by the recovery of vanadium metal. The Germans had no appreciable stocks of vanadium, the only source of this metal available to them being in iron ores of Luxemburg, Lorraine and Salzgitter, which contain comparatively small quantities of vanadium. Processes were worked out for the recovery of vanadium-containing slags in various steelworks using these ores. But for the success of these processes, the shortage of vanadium in Germany would have been serious. As it happened, not only was this shortage entirely eliminated, but vanadium itself became available in sufficient quantities to be used as a substitute for other non-ferrous metals (e.g., tungsten).

The first section of the D.S.I.R. survey is devoted to mining, ore dressing and statistics. It lists some forty papers on subjects varying from lead, silver and zinc-ore mining in the Hartz to magnetic separation and dressing, the testing and analysis of ores, and electrical mining equipment. Further sections are devoted to the production and recovery of light metals, ferro alloy metals, precious and rare earth metals, selenium, etc. In addition, there are appendices listing documents and reports relating to non-ferrous ore deposits and also reports of U.S. Government sponsored research.

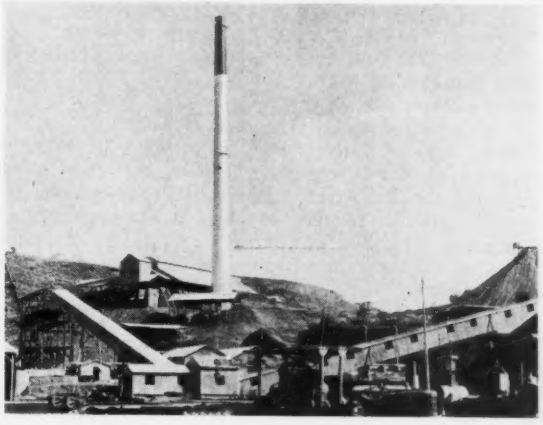
All B.I.O.S., C.I.O.S. and F.I.A.T. reports listed in the survey are in English and most of them are obtainable from H.M.S.O. Photo-copies of reports which are unpublished or out of prints are obtainable from the Technical Information and Documents Unit (T.I.D.U.), 15 Regent Street, London, W.1. Many of the German documents have not been translated, but summaries written in English are available. These documents can be consulted by appointment and translations can be furnished at cost price.

Exploration at Mount Isa

Mount Isa Mines Ltd. has recently carried out an active exploration programme throughout Australia and has decided to concentrate on the Mount Isa-Cloncurry region in North Queensland as prospects there are considered better than elsewhere in Australia, according to our Australian correspondent.

The Mount Isa Mines has potential reserves of such importance that the town can look forward to a very long period of production of lead, silver, zinc and copper. Apart from the continued satisfactory development in the main workings, the company has discovered, at a distance of 13 miles north of the mine, a lead-silver-zinc deposit of major importance; in addition to the opening up of this deposit, the company is drilling on the Lawn Hills lead-silver-zinc field considerably north of the Mount Isa field.

During the past eight years the company has spent £10,000,000 on capital works in Mount Isa. So far, the mine has produced 750,000 tons of lead, 58,000,000 oz. of silver, 740,000 tons of zinc and 60,000 tons of copper. The district has not received much Government assistance, despite this great production. Coal and coke have to be hauled 700 miles from the coast and rail transport was not always satisfactory, and attention could be given by Government to housing, roads water supply, as well as the projected Burdekin River hydro-electric power scheme.



The new copper smelter at Mount Isa Mines

The discovery at 13 miles north of the mine was made some two years ago, and the deposit is about 500 ft. wide, offering attractive possibilities as a very large, low grade, open cut proposition. Diamond drilling is being carried to increasing depths, and lead and zinc values are increasing with depth, so that it may be possible to consider an underground mining project below the limits of open cutting. The discovery of this orebody is the direct result of intensive geological work, the further result of which has been the discovery of two lead-silver-zinc occurrences between the Thirteen Mile and the main mine. Exploration is proceeding in the oxidized zone, and although neither ore occurrence is comparable in size to the Black Star orebody, a substantial tonnage of ore can be expected.

The Lawn Hills field, may prove to be of some importance; the ore occurrences do not appear to be wide, but earlier reports have indicated a higher grade of ore than that mined at Mount Isa. However, exploratory work so far has not disclosed copper orebodies other than that now being worked alongside the Black Star lode.

New Developments in the Coal Mining Industries of Gt. Britain and the United States

While the improvements made to machinery used in the coal mining industry are often the outcome of the practical experience of colliery face workers, basic changes in the design of machinery or in the methods and techniques of conducting mining operations are more often than not the result of research conducted by company or governmental departments in the vast majority of cases.

These developments are the product of research and experience in many countries, and cover the complete operation of coal mining in all its aspects.

Apart from the general value of these new practices, it is noteworthy that machinery which aids in the smooth flow of coal from face to surface, to maintain or increase output, also bring a greater measure of safety to the miner.

LIQUID-OXYGEN-TYPE EXPLOSIVE

The adoption of a liquid-oxygen-type explosive has reduced the cost of overburden blasting by approximately 33 per cent at one of the mines of the Sunnyhill Coal Company, United States. The method consists of charging cartridge bags of finely divided lampblack with measured quantities of liquid-oxygen at the charging station maintained by the explosives company. The oxygen-charged cartridges are then handled and fired in the same manner as ordinary explosives, except that they must be detonated before the oxygen in the cartridges has time to disperse into the atmosphere.

In charging the cartridges, very finely-divided lampblack in 4¼ in. by 21 in. moisture-resistant bags is received and stored in the explosive company's charging station located near the mining operations. These bags of lampblack are entirely non-explosive until charged with liquid-oxygen, which is received at the plant in tank car lots at a temperature of minus 300 deg. F. and a pressure of 9 lb. p.s.i. The charged bags are prepared only on the basis of immediate demand.

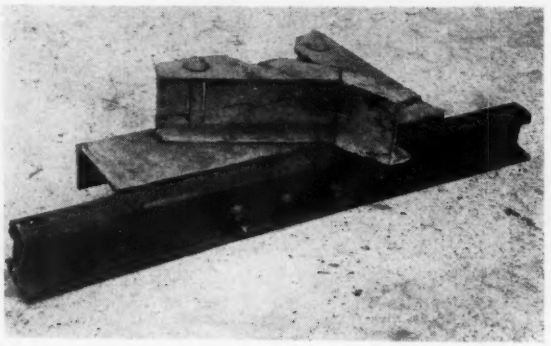
In the blasting methods, while one member of the overburden blasting crew drives to the charging station to pick up the soaking box and charged cartridges, the other three members of the crew make all preparations for quickly loading, stemming and firing the designated number of horizontal blast holes. Time is most important after the soaked cartridges arrive at the pit, since best practice requires that the charged bags be detonated within 50 min. after being taken out of the soaking box.

An increase in local gas ignitions in American coal mines during recent weeks is a danger signal that the mining industry cannot afford to ignore, according to Mr. D. McKay, Secretary of the Interior.

To guard against possible disaster, several precautionary measures are of marked importance.

Good ventilation is a prime requirement. Proper tests for gas before and after blasting, should be made before taking electrical equipment into working places, and frequently during the operation of such equipment. Sources of ignition should be eliminated by using only permissible face equipment, maintaining it in permissible condition, and using explosives in a manner approved by the Bureau of Mines. With respect to bituminous-coal mines, accumulations of coal dust and loose coal from the workings should be removed.

In so far as developments in the U.K. coal industry are concerned, a stop block, for use on underground haulage roads, which is cheap to make and can be constructed at any colliery, has been designed at Lucy No. 4 Colliery, Merthyr Tydfil. The device consists of a channel to which two notched iron bars are loosely rivetted. Holes are drilled in the sides of the channel corresponding to the holes in the fishplate on the rail.



The Morgan stop block

The bars are notched so that they can be used to stop tubs running in either direction, and the stop is easily dismantled so that it may be removed from one station to another.

Another device, the Wardlow spring-loaded chock designed to set itself automatically against the roof it is to support, has been developed in the N.C.B. and is based on the telescopic principle, the main body of the chock is two steel tubes, one sliding within another. The lower tube is split down its length and is encircled by a clamp, so that when the inner tube is adjusted to the necessary height the clamp, which has a toggle action, tightens the outer tube to hold the inner tube in place.

A strong spring set within the two tubes holds the head of the chock against the roof when the clamp is slack. The chock is compressed before it is taken on to the face. When it is in position, the clamp is released and the spring holds the chock against the roof while the clamp is tightened.

SAFETY ON STEEP GRADIENTS

The cause of safe underground operations is again furthered by an additional braking device for use on compressed air haulage engines working steep underground gradients which has been designed at Navigation Colliery, Monmouthshire. The compression brake consists of a second control valve, situated on the compressed air bridge pipe near the normal control valve. When the control is shut and the clutch engaged in the haulage drum, the reversing lever is set in the opposite direction to the travel of the drum.

The outside air then enters the cylinders through the exhaust ports and is compressed by the pistons. In turn the compressed air is controlled by the second valve and exhausted into the atmosphere. The device provides additional control to that of the normal footbrake and

reduces considerably the wear that is normally experienced by the brake linings and packing glands.

CONTROL OF TUB MOVEMENT

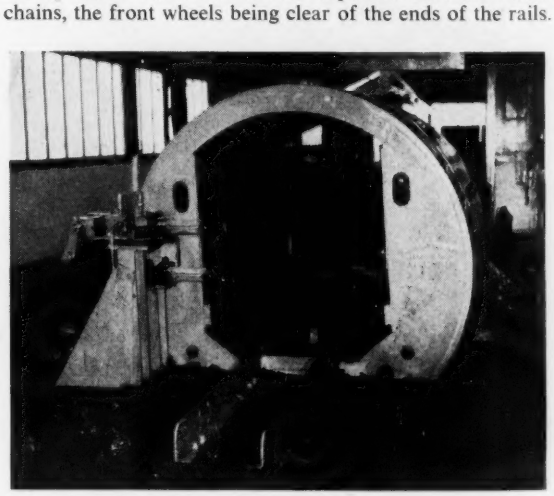
Of particular interest is a device capable of arresting mine cars running into a cage designed at No. 7 Area of the N.C.B. East Midlands Division. The invention consists of a retractable stop moved by a lever which, when it moves the stop in one direction sets it in its operative position, and when it moves in the opposite direction allows the stop to be retracted. The stop may return to the inoperative position by its own weight or by mechanical means. A steel frame is fitted to the cage floor between the rails, and the stop is mounted on the frame so that it engages the axle, or dummy axle, of the mine car. A shaft is secured in upturned flanges at the end of the frame.

In the base of the frame are slideways carrying a cross-head which is also adapted to slide on the shaft. The shaft has a spiral spring which thrusts the cross-head towards a rubber washer placed between one end flange of the frame and the cross-head itself. The cross-head has a transverse pin mounted in each of its slides parallel with the frame, and an arrestor arm is pivotted on each pin and each arm has a stop to engage the axle.

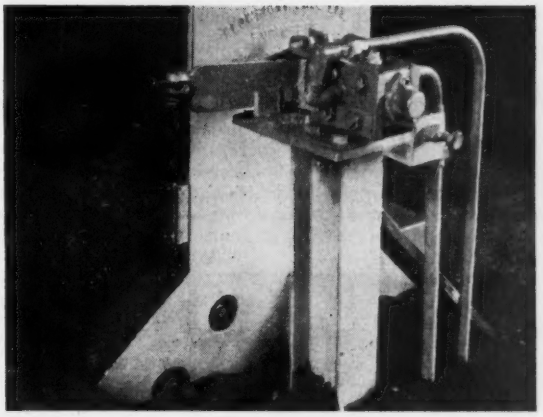
When the arrestor arms are in the operative position they are supported by levers with rollers at their free ends, the other ends of the levers being secured to the shaft. An external lever is connected to the shaft so that the stops can be operated manually. When a mine car turns into the cage its axle engages the stops which are then in the operative position. The cross-head compresses the spiral spring, absorbing the momentum of the mine car. When the cage reaches the pit bank or pit bottom the external lever is engaged either by the hydraulic ram or by a hand operated linkage system which retract the arrestor stops and release the car.

The control of moving tubs is also aided by an automatic tippler control developed at Babbington Colliery, Nottingham. The device is installed at the surface of the colliery and is designed to make the operation of tippling fully automatic.

The tubs are controlled by chain feeders in their run to the tippler. The chains engage with and carry the tub axles, the rails being discontinued along the sides of the feeder. The full tub waiting to enter the feeder is held by a drop catch with its front axle suspended over the feeder chains, the front wheels being clear of the ends of the rails.



The tippler control showing control valve resetting mechanism, empty side in-line valve and control valve



The full side in-line valve

On release, the catch allows this axle to drop on to the feeder chains. As the tub is carried along on the feeder chains, the front axle depresses two arms, one of which trips a star catch, allowing another full tub to take up its position, the other resetting the drop catch.

The tippler is pneumatically controlled by three valves. One of these, situated at the empty side of the tippler, is the operating valve; the other two, one at each side of the tippler, are the in-line valves.

As the full tub enters the tippler, it depresses the arm of the full side in-line valve. Meanwhile, the empty tub emerging from the tippler depresses the arms of the operating valve and empty side in-line valve simultaneously. The operating valve immediately admits air to the operating circuit, but this remains broken until the empty tub clears the arm of the in-line valve. As soon as this arm is allowed to spring back, and provided the full side in-line valve is clear, the tippler operates.

As the tippler rotates, a projection on the empty side end-ring resets the operating valve, and a similar projection on the full-side end-ring strikes the lever of the drop-catch release valve, allowing the next full tub to engage with the feeder, and is so timed that the full tub has been propelled by the feeder and is entering the tippler as the tippler stops.

INCREASED TIPPING AREA

Colliery transportation of another type is served by a new type of catchplate for aerial ropeway buckets, designed at Dinnington Main Colliery, Worksop, which has increased the area over which colliery dirt can be tipped.

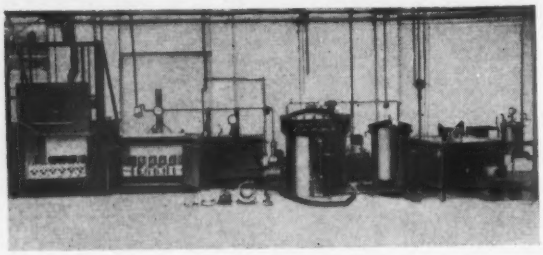
The standard catchplate fitted to aerial buckets permits the bucket to be tipped one way only. With the new catchplate it can be tipped in either direction. The bucket is normally carried by trunnions fitted to each end of the bucket at a point near the centre of gravity of the empty bucket but below the centre of gravity when the bucket is full. A lever fits into a slot on the catchplate and holds the full bucket upright. When the catch is released the bucket, which is balanced off centre from the trunnion, swings inward and deposits its load. The modified catchplate provides a second slot in which the catch can engage, permitting the bucket to lie off centre but on the opposite side. On release the bucket swings outwards to empty.

Capacity of a single tipping point at Dinnington Main Colliery has been increased from 38,000 tons in six weeks to 63,000 tons in ten weeks.

TECHNICAL BRIEFS

New Impregnation Process for Sealing Porous Castings

A recent development is the Pulsometer process of impregnation for the sealing of porous castings. This process has been successfully applied to bronze, gunmetal, steel, cast iron and aluminium castings of all sizes, some of which have included highly finished intricate engine castings, as well as suction and delivery covers of pumps weighing over half a



Apparatus used in the process of sealing porous castings

ton each, standing up to a pressure of 1,200 p.s.i. after impregnation. The process was originally conceived as an expedient by the Pulsometer Engineering Co., Ltd., for the saving of castings which were shown to be porous under pressure.

The manufacturers have perfected their own special vacuum process of impregnation with a resultant saving in ferrous and non-ferrous castings. Money and labour can be economized if faulty castings can be rescued from the scrap heap.

The value of this method of impregnation, which is A.I.D. approved, is due to the special process which consists of the vacuum impregnation of the castings with a phenol-formaldehyde bakelite solution. The castings are first placed in a gas-fired oven and raised to a temperature of 135 deg. F., for at least one hour in order to dry them out. They are then transferred to an autoclave in which they are subjected to a vacuum of about 28 in. of mercury. The castings remain at this reduced pressure for about ten minutes, after which the bakelite solution is introduced, the vacuum being maintained. A five-minute period is allowed for soaking. Then the vacuum pump is shut off and the autoclave vented to atmosphere.

Air pressure is then applied, thus forcing the solution into the evacuated pores with a differential pressure of up to 80 p.s.i. according to the size and type of casting. After twenty minutes the release valve is opened and the bakelite solution allowed to drain back to the reservoir. The castings are then removed from the autoclave, washed with thinners and placed in an oven for curing. Vacuum impregnation has now been so perfected that castings can be sealed within 48 hours.

Fluosolids Roasting of Zinc Concentrates

The first successful roasting of a zinc sulphide flotation concentrate in a Fluosolids reactor has been described by T. T. Anderson and R. Bolduc (*Chem. Eng. Progr.* 49, 527, 1953). The plant provides a zinc oxide calcine suitable for electrolytic leaching as well as sulphur dioxide gas which is used for the production of contact sulphuric acid. A further feature of interest is that the reactor is approximately 2½ times as big as any previously built for operation on the Fluosolids principle. The plant has modern centralized instrumentation giving good plant control. The original paper gives the thermodynamic calculations as well as appropriate operating data.

Titanium Carbide Inserts to Raise Rod Mill Yields

Rod mill yields are being substantially increased in addition to improving the finished rod's cross-sectional accuracy and surface finish through use of thin pieces of preformed, sintered titanium carbide for rod mill guide inserts, according to Kennametal, Inc., of America.

These inserts were developed jointly over an 18-month period by engineers of Kennametal and one of the country's largest rod producers, it was stated. Operations now go from 200 to 300 hours between guide regrinds while conventional guide materials normally require replacement or regrinding in from three to ten hours of mill operations, officials of Kennametal stated.

A Silicon Carbide Furnace Element

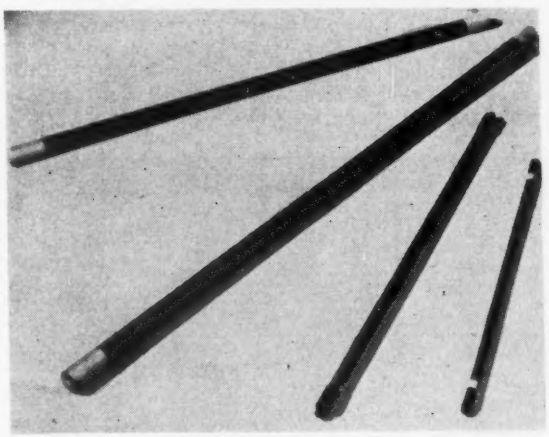
Silicon carbide electric heating elements have been coming more and more into use in recent years for high temperature furnaces, owing to the fact that they have many advantages over metallic elements. These advantages include operation at high temperature and watt loadings, and quickly rise to temperature without the need of any complicated control system. The elements can be used in conjunction with all normal types of refractories, and do not need protection in special atmospheres.

These elements are designed for high temperature electric furnaces, and units have been utilized in the United States and South Africa in connection with the treatment of tungsten ores. The manufacturers suggest that the elements would be suitable for the replacement of existing elements used in mining and heavy industry.

Despite their inexpensiveness, the elements have hitherto suffered from other disadvantages, more particularly their short, useful life and, in the United Kingdom, dependence on imported elements. The Morgan Crucible Company Ltd., has now succeeded in improving this type of element, and a silicon carbide element is being marketed under the name of Crusilite.

This is a one-piece silicon carbide tube produced by a completely new method, in which the central hot zone is in the form of a spiral of the requisite length. It is entirely suitable for working over a wide range of element temperature from 800 deg. C. to 1575 deg. C. (1472 deg. F. to 2867 deg. F.).

Being in one piece Crusilite is stronger than other types of silicon carbide elements, and an efficient terminal arrangement can be used. At present available for the 10 and 14 mm. diameter elements only, this consists of special metal terminal caps shrunk on to the metallized ends of the elements. In some furnaces where space is restricted, it may not be possible to make use of these terminal caps, in which case elements can be supplied with metallized ends only. These shrunk-on terminal caps assure a good electrical contact on to the silicon carbide and provide easy connection to the power supply.



Typical Crusilite elements. Note the special terminal caps on smaller sizes

Despatches from manufacturer's stock will be within a tolerance of + or − 10 p.c. of the nominal, but the resistance of all elements supplied as a set for any particular furnace will not vary by more than + or − 5 p.c. of the mean, and, in many cases, by considerably less. This narrow tolerance ensures even heating throughout the furnace and is particularly valuable when elements are connected in series.

METALS, MINERALS AND ALLOYS

COPPER.—Copper production on the other side of the Atlantic continues to be gravely impaired by strikes. These disturbances have been reflected readily enough on the London market but the New York price has stayed firm at 30 c.; now, for the first time, American traders are seriously suggesting that the New York price may advance before the end of the year if the strikes are not settled quickly.

In fact, a settlement has been reached at Phelps Dodge El Paso refinery for a 5 cents straight increase with a further 2 cents increase in fringe benefit. These terms are expected to be acceptable at Phelps Dodge's other plants at Douglas and Morenci, Arizona. They may also lead to a settlement at the strike plants of Inspiration Consolidated Copper, Miami Copper, Copper Cities, Castle Dome and Anaconda. On the other hand, a fresh strike has broken out this week at the American Smelting and Refining Company's large copper smelter at Garfield, Utah, where the United Steel Works hold bargaining rights. Garfield produce about 20,000 tons of copper a month.

Meanwhile in Chile, the labour dispute seems to have worsened. The decree, ordering the workers to return, which was withheld on a number of occasions because it was feared it might provoke a national stoppage, has at last been issued. It was accompanied by an order for compulsory arbitration and a decree declaring the mining provinces to be "emergency zones." That the decree has been issued at all is a bad sign for it indicates that no hope of negotiation exists. The miners have threatened to resist any show of force and there are reports that arms and ammunition have been stolen; other messages say that the miners and their families are leaving the mining areas.

As we go to press it is reported that the decree has had the effect of extending the strike to Chuquicamata where the miners had previously continued operations in order to support the strike funds. Troops have occupied the mine areas but the miners are resisting conscription. As a result of the total stoppage the Chilean Government has suspended sales negotiations and shipments of copper are being detained at ports of loading. What the outcome will be, whether the copper companies can continue to operate profitably or whether they can bring pressure for a more favourable exchange rate, seem at the moment remote questions besides that of whether the Chilean Government can hold the situation—which to say the least is explosive.

With copper deliveries in the first half of this year at only 140,000 tonnes it is now extremely unlikely that Chile will manage to deliver the 300,000 tons she has sold.

Latest Copper Institute figures reflect the strikes in America. Output for refined copper was only 101,037 tons in August compared with 105,827 in July. At August 31 refined copper in the hands of smelters and producers stood at only 58,387 tons —a fall of over 10,000 tons on the month—compared with 125,759 tons on March 31. Unsold world stocks of copper were as little as 230,000 s.tons at the end of August.

LEAD.—Demand for lead in the United States during the past week has been encouraging with a fair amount wanted for October shipment and the New York price has advanced beyond 14.5 c. per lb. to 14.75 c. According to A.B.M.S. statistics stocks at the end of July, at 93,030 tons had fallen back to very little above the level of January; production, too, had fallen to 35,716 tons the lowest monthly output of the year and lower than that of any month in 1953. More information is required on the current stockpile purchasing rate and on how lead is to be acquired in exchange for farm produce before a further advance in lead can be predicted. Large shipments of ore and concentrates are said to be being made to Germany from Chile. United Park City Mines has announced that it will shortly reopen its lead, zinc and silver mines in Summit County, Utah, which have been closed for about two years because of low prices.

TIN.—Tin continues to be a steady market, lacking in feature but giving no rise for concern. Confident forecast continue to be made about the future of the American economy but they are almost always linked by events; the prospects on that activity, and tin consumption, will proceed at the somewhat depressed but still quite good levels.

Meanwhile preparations are being made for next week's meeting of the International Tin Council although no important developments are expected from it. Assuming that the signatories will proceed to ratification—and now that the French proposal for a reduced ceiling price appears to have been accepted there is no reason to suppose that they will not—the next important move will be the appointment of chairman and manager for much of the scheme's success will depend on its handling. A note in the Australian Mineral Industry Quarterly gives the view of a country supplying about 85 per cent of its own tin requirements—and therefore without strong producer and consumer bias—on the recent French action. The note calculates that the saving to France of having an average price £20 lower than previously agreed would be about £150,000. On the other hand the lowering of the average might have a serious effect on the small-scale Australian producers. The note does perhaps less the justice to the critical French shortage of sterling in which currency France buys her tin. But perhaps what is really at the heart of the difference between the Australian and the French views is the relative significance of the average price and the upper and lower limits. The Australian hope is that the price of tin will be maintained within the middle range; the French fear is that it is the upper and lower limits that will be of the greatest significance. Only experience of the operation of the scheme will determine which view is right.

Official statistics show that of $36,014,970 received in the first six months of 1954 by the Bolivian Government, $23,806,165 or 66 per cent came from the sale of tin concentrates.

Malayan shipments of tin in August amounted to 6,025 tons of which 142 tons were dispatched to the United Kingdom, and 3,775 to the United States.

ZINC.—The American demand for zinc has been fair without ever being exciting or giving promise of a further advance from 11.5 c. per lb. E. St. Louis. Indeed the quietness of the past week has in part been attributed to the consequence of unusually heavy buying immediately before the price advanced. The American Zinc Institute statistics show that at the end of August smelter stocks stood at 193,285 tons compared with 198,027 a month earlier. Production was up to 71,193 tons the highest since May. Deliveries to the stockpile reached 13,712 tons compared with 13,214 in July and 5,685 in June. Because of the permitted time lag between purchase and delivery it is impossible from these figures to estimate the rate of purchasing but it is believed to be not less than 20,000 tons.

Illinois Zinc has announced that it is negotiating for a copper-lead-zinc deposit in the South West of the United States and is also negotiating for an exploration contract at the Shannon Mine, Gleeson, Arizona, which is to be developed as a lead-zinc producer.

ANTIMONY.—The Government of India has accepted a Tariff Commission recommendation that protection to the antimony industry should be continued till December 31, 1956, at the existing rates of protective duties of 31½ per cent and 21 per cent *ad valorem* on antimony and crude antimony respectively.

QUICKSILVER.—The continued shortage of mercury has resulted in further rises in the price of mercury which is now at record levels. The reason for the tight trading conditions prevailing can still be traced to the large U.S. stockpiling orders faced almost a year ago. The chief hope of seeing an easing of the trading position and a reduction in the price lies in the belief that the expiration of the present contracts for both Spanish and Italian mercury may not be far distant.

TITANIUM.—Titanium, the six-year-old wonder metal, is still being subjected to costly exhaustive experiments to find an economic method of producing it by a continuous process.

In Canada the Shawinigan Water and Power Company expects to have a new semi-commercial titanium metal plant at Shawinigan Falls, Quebec, completed before the end of October

and the company hopes that its new electrolytic and continuous process may reduce the price of titanium from its present level of approximately $4.50 - $4.75 per lb. In the United States, the Mallory-Sharon Titanium Corporation has announced that it is now producing titanium ingots with its unique double melting process operated by remote control. The Pyromet Company of New York has concluded a contract with G.S.A. to operate U.S. Government-owned magnesium facilities at Manteca, California, to study a new titanium reduction process.

WOLFRAM.—Demand, clear of all complications arising from the Far Eastern situation, is believed to be the real strength underlying the distinctly firmer tone which has developed in the market for wolfram ores over the past two weeks. Continental buying has been better and this, together with a scarcity of seller, has provided a firm basis for the upward movement of the price.

Iron and Steel

With all Britain's basic industries flourishing the pressure on steel production capacity has become intense and new output records are likely to be achieved before the end of the year. Order books for many types of steel are already filled to the end of the year or even beyond that date and it has become necessary to increase the imports of sheet steel and plates to meet the swollen requirements of the motor and shipbuilding industries.

World markets too are emerging from the trough of depression. American steel production is climbing slowly; in Germany the ascent is more rapid and, re-equipped with new and efficient plant British makers are in a strong position to take advantage of the better opportunities in the world markets. It may be accepted as a sign of strength that British makers have now followed the lead of the European export cartel in raising some export prices. Sheets already command a premium and the price of heavy steel sections has now been advanced £1 to £34 per ton for shipments to countries outside the British Commonwealth. Imperial preference no doubt has its critics but it is a reasonable fact that approximately 50 per cent of British steel exports are consigned to Australia, New Zealand and Canada.

The sharp rise in pig iron production last month was a welcome development not only because of heavier requirements of the steel plants, but also on account of the foundry trade which is developing signs of increasing animation. More orders for light castings have restored many of the smaller establishments to full employment.

The re-rollers of small bars and light sections are in a similar position. For months past they have suffered from a complete dearth of export orders owing to severe European competition. But that phase is now ended. Prices are firmer, export business is plentiful and re-rollers have at least three months work in hand. This improvement has also lead to heavier calls for billets sheet bars and slabs.

In the finished steel trade, heaviest bookings are for sheets, plates and sections. But the tube makers and iron works are also very busy whilst railway equipment is in constant demand and makers of strip are so full of work that it has become difficult to place an order for delivery earlier than Period I of 1955.

The London Metal Market

(From Our Metal Exchange Correspondent)

The undertone of the tin market has been good, which has enabled the price to rise in sympathy with lead and copper. The Eastern price on Thursday morning was equivalent to £746 per ton c.i.f. Europe.

The copper price has risen sharply on the news that the Chilean output for the remainder of this year will make impossible the fulfilment of the sales contracts at present in existence. In addition, the technical position of the London Market has caused an increase in the backwardation and it seems possible that the maximum span has not yet been reached. The sales of Japanese copper referred to last week appear to have ceased as sellers are waiting to see if the present price rise will go further. Generally speaking, the demand has kept up remarkably well, although, as is usual with rising prices, some customers are now holding back.

In lead, the backwardation has increased owing to shortage of nearby metal and the general price level has risen in sympathy with copper and after the implications of the American Government's buying policy have become more generally realized. Demand has been good and this has enabled the U.S. price to be raised nearer to the goal of 15 c.

The zinc market has been disappointing, as although turnovers have been fairly heavy, the price has failed to rise in sympathy with the other metals, owing to a steady stream of selling, which, although not large, has been sufficient to damp down enthusiasm. The latest reduction in the American stock figure is, however, a sign of the times and it is to be expected that in the long run buying by the U.S. Government will reduce the figure steadily to a point where the metal once more becomes interesting: when this stage has been reached, it seems to be almost certain that an attempt will be made to raise the price to a level of 12½ c. per lb.

Closing prices and turnovers are given in the following table:

	September 9		September 16	
	Buyers	*Sellers*	*Buyers*	*Sellers*
Tin				
Cash	£734½	£735	£736	£736½
Three months	£734½	£735	£736	£737
Settlement	£735		£736½	
Week's turnover	665 tons		605 tons	
Lead				
Current month	£100	£100½	£101½	£102½
Three months	£99	£99½	£99½	£100
Week's turnover	3,700 tons		3,475 tons	
Zinc				
Current month	£81	£81½	£80½	£81
Three months	£80½	£80½	£80½	£80½
Week's turnover	9,200 tons		4,075 tons	
Copper				
Cash	£246½	£246½	£250	£251
Three months	£239½	£239½	£242	£242½
Settlement	£246½		£251	
Week's turnover	5,850 tons		5,800 tons	

OTHER LONDON PRICES — SEPTEMBER 16

ANTIMONY

English (99%) delivered, 10 cwt. and over .. .. £210 per ton
Crude (70%) .. .. .. £200 per ton
Ore (60% basis) .. .. .. 22s./24s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade) .. .. £483 per ton

OTHER METALS

Aluminium, 99.5%, £156 per ton
Bismuth (min. 2 cwt. lots) 16s. lb.
Cadmium (Empire), 12s. lb.
Chromium, 6s. 5d./7s. lb.
Cobalt, 21s. lb.
Gold, 250s. 8d. f.oz.
Iridium, £45 oz. nom.
Magnesium, 2s. 4d. lb.
Manganese Metal (96%-98%) £225/£262
Osmiridium, £40 oz. nom.
Osmium, £50 oz. nom.
Palladium, £7 oz.
Platinum, £30/£31
Rhodium, £42 oz.
Ruthenium, £22 10s. oz.
Quicksilver, £105 ex-warehouse
Selenium, 35s. 9d. nom. per lb.
Silver 73d. f.oz. spot and 72½d. f'd.
Tellurium, 15s./16s. lb.

ORES, ALLOYS, ETC.

Bismuth .. .. 40% 6s. 3d. lb. c.i.f.
30% 5s. 0d. lb. c.i.f.
Chrome Ore—
Rhodesian Metallurgical (semi-friable) 48% £12 8s. 0d. per ton c.i.f.
" Refractory 45% .. £12 14s. 0d. per ton c.i.f.
" Smalls 44% .. £8 5s. 6d. per ton c.i.f.
Magnesite, ground calcined .. £26-£27 d/d
Magnesite, Raw .. .. .. £10 - £11 d/d
Molybdenite (85% basis) .. 102s. 4d.-103s. per unit c.i.f.
Wolfram and Scheelite (65%) .. 187s. 6d. - 192s. 6d. per unit c.i.f.
" " " U.K. Gov't Stock d/d 202s. 6d. per unit inc. charges
Tungsten Metal Powder .. .. 16s. 9d. nom. per lb. (home)
(98% Min. W.)
Ferro-tungsten .. .. .. 13s. 9d. nom. per lb. (home)
Carbide, 4-cwt. lots .. .. £37 6s. 3d. d/d per ton
Ferro-manganese, home .. .. £54 15s. 0d. per ton
Manganese Ore Indian c.i.f. Europe (46%-48%) .. .. .. 68d./70d. per unit nom.
Brass Wire .. .. 2s. 7½d. per lb. basis
Brass Tubes, solid drawn .. 2s. 0d. per lb. basis

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

There has been little fresh news from Kaffirs and this fact, coupled with Formosa and an over-bought position, caused an initial shakeout in some of the more popular stocks.

Finance houses mostly ended the week slightly below previous levels as can be seen in the accompanying list, but in fact many of these losses were eradicated in late dealings on Wednesday.

Among individual Rand mines, similar conditions prevailed. Such interest as was evident was mainly in Far West Rand shares. Doornfontein again attracted buyers but the brightest spot was New Pioneer. These shares advanced on expectations of the flotation of the Buffelsfontein property in the near future. New Pioneer shareholders should receive rights in this.

Large operators in Orange Free State shares who burned their fingers at the end of last account were adopting a rather more cautious approach, but it was noteworthy that as soon as dealings got under way later in the current week, prices quickly firmed up and on Wednesday good advances occurred. Geoffries rose on reports that a new flotation in conjunction with Anglo American Corporation may soon be made. The official starting of operations by Harmony attracted attention to the shares. Freddies Consols were firmer following the news that subscriptions for 96 per cent of the new stock had been paid up. Middle Wits, which have interests in the same area as Geoffries, attracted speculative buying and St. Helena and Welkom contrasted gains in price with losses encountered by some other leaders. The easier trend in President Brand may have been a reflection of the caution engendered by last week's over-bought position, but some market circles are already comparing the future of the mine over the long term with West Driefontein.

Rather better news came from West Africa. The good results from Ariston and Gold Coast Main Reef hardly received the attention they deserved in quiet markets. Ashanti announced that they have encountered the main reef on the 38th level. This is the lowest point so far reached on the mine. No values have yet been received.

Diamonds were firm. Anglo American Trust rose on investment buying and De Beers went ahead in anticipation of the interim dividend. Platinum issues returned to popularity and Potgeitersrust and Watervaal recorded substantial gains.

Coppers were a strong market. The firmness of the metal price, coupled with news of continued strikes in Chile and the United States, encouraged buyers. In addition, there have been favourable comments in the press and calculations of increased profits despite the rise in working costs. It was noticeable that the increase in the latter was on a lower scale than previously. Bancroft recovered some of the ground lost in the sharp relapse last week. The buoyance of these shares remained unexplained but there have been unconfirmed rumours of uranium. Tanks again rose due to news of the Union Minière share split and reports of increased importations of coal via the Benguela Railway.

Eastern tins were quiet and lack of interest caused falls in some of the leaders. Nigerians, on the other hand, went ahead. Amalgamated Tin led the way in anticipation of a final dividend and other shares advanced in sympathy. The favourable Amalgamated Tin reserve position and the columbite output figures were commented upon in the market. Beralts rose.

The improved values in the metal market were responsible for the cheerful lead/zinc section and Barriers led the way with good gains. The uncertain political and financial position in Burmah brought about a wait-and-see policy in Mawchi and Burmah mines.

Elsewhere, there was little of interest to report. Wankies were good following reports that the Southern Rhodesian Government are taking a serious view of the acute coal transport position and are beginning a drastic sort-out.

	Price Sep. 15	+ or — on week
FINANCE		
African & European	3⅛	—⅛
Anglo American Corpn.	8⅞	—¼
Anglo-French	25/-	—7½
Anglo Transvaal Consol.	30/-	—1/3
Central Mining (£1 shrs.)	43/6	+1/3
Consolidated Goldfields	5/3	+3d
Consol. Mines Selection	42/6	—7½d
East Rand Consols	3/9	—1½d
General Mining	4⅜	—7/16
H.E. Prop. 5/- Shares	12/-	—4½d
Henderson's Transvaal	8/6	.....
Johnnies	49/-	—3d
Rand Mines	4	—⅛
Rand Selection	45/7½	—1/3
Union Corp. (2/6 units)	38/6	—1/-
Vereeniging Estates	5 1/16	—⅛
Writs	36/10½	—1/10½
West Wits	44/-	—1/-
RAND GOLD		
Blyvoors	33/9	—9d
Brakpan	7/9	—3d
City Deep	15/7½	—7½d
Consol. Main Reef	20/-	.....
Crown	41/10½	—7½d
Daggas	68/1½	—1/10½
Doornfontein	31/-	—6d
Durban Deep	30/-	—1/3
E. Daggas	12/3	+6d
E. Geduld (4/- units)	28/6	—6d
E. Rand Props	2⅛	—1/16
Geduld	3⅞	.....
Govt. Areas	12/6	—6d
Grootvlei	18/6	—9d
Libanon	10/6	—6d
Luipaards Vlei	22/3	.....
Marievale	18/9	—6d
Modderfontein East	16/3	.....
New Kleinfontein	12/6	—3d
New Pioneer	19/6	+2/6
Randfontein	67/6	+6d
Robinson Deep	19/3	.....
Rose Deep	13/1½	—7½d
Simmer & Jack	3/9	—6d
S.A. Lands	22/6	—7½d
Springs	3/4½	—1½d
Stilfontein	29/-	—3d
Sub Nigel	40/7½	—7½d
Van Dyk	4/9	—3d
Venterspost	11/9	—6d
Vlakfontein	14/3	—3d
Vogelstruisbult	35/-	—9d
West Driefontein	6 1/16	.....
W. Rand Consolidated	50/7½	—7½d
Western Reefs	48/9	.....
O.F.S.		
Freddies	8/4½	—6d
Freddies Consolidated	22/-	+6d
F. S. Geduld	6 1/16	—⅛
Geoffries	23/-	—3d
Harmony	40/9	+3d
Loraine	18/-	—1/3
Lydenburg Estates	27/6	—2/6
Merriespruit	12/6	.....
Middle Wits	18/6	+3d
Ofsits	82/6	—7½d
President Brand	78/9	—1/10½
President Steyn	43/3	—1/9
St. Helena	34/-	+2/-
Virginia Ord.	16/3	.....
Welkom	32/-	+1/-
Western Holdings	5 1/32	+1/32
WEST AFRICAN GOLD		
Amalgamated Banket	1/6	.....
Ariston	6/10½	+1½d
Ashanti	19/-	+3d
Bibiani	4/4½	—1½d
Bremang	1/7½	.....
G.C. Main Reef	3/7½	+1½d
Kononeo	2/3	—1½d
Lyndhurst Deep	10½d	.....
Marlu	1/4½	.....
Taquah & Abosso	2/4½	.....
W. Selection & Dev.	6/6	.....
AUSTRALIAN GOLD		
Boulder Perseverance	8/10½xd	.....
Gold Mines of Kalgoorlie	15/-	—3d
Great Boulder Prop	8/9	—3d
Lake View and Star	15/3	—9d
Mount Morgan	18/9	—3d
North Kalgurli	8/7½	+1½d
Sons of Gwalia	5/6	—3d
Western Mining	14/3	—3d
MISCELLANEOUS GOLD		
Cam and Motor	8/10½	—4½d
Champion Reef	4/7½	+½d
Falcon Mines	8/7½	—6d
Globe & Phoenix	24/-	.....
G.F. Rhodesian	7/7½	—1½d
London & Rhodesian	5/-	.....
Motapa	1/9	.....
Mysore	5/3	.....
Nundydroog	6/4½	.....
Ooregum	4/10½	—3d
MISCELLANEOUS GOLD (contd.)		
St. John d'el Rey	15/-	—3d
Zams	40/9	+9d
DIAMONDS & PLATINUM		
Anglo American Inv.	7⅛	+⅛
Casts	29/6	—6d
Cons. Diam. of S.W.A.	6½	.....
De Beers Defd. Bearer	6⅛	+⅛
De Beers Pfd. Bearer	18	.....
Pots Platinum	10/6	+1/3
Watervaal	17/-	+1/6
COPPER		
Chartered	87/6	+2/6
Esperanza	5/6	+1½d
Indian Copper	5/3	—3d
Messina	4½	—⅛
Nchanga	9 1/16	+⅛
Rhod. Anglo-American	79/6	+6d
Rhod. Katanga	11/10½	+4½d
Rhodesian Selection	22/7½	+1/4½
Rhokana	28	+⅛
Rio Tinto	38	+⅛
Roan Antelope	19/7½	+4½d
Selection Trust	49/9	—3d
Tanks	5⅛	+⅛
Tharsis Sulphur Br.	4	+7/16
TIN (Eastern)		
Ayer Hitam	25/4½	—4½d
Gopeng	7/10½	—3d
Hongkong	7/3	+3d
Inoh	16/6	.....
Kamunting	7/9	.....
Kenong Dredging	3/9	.....
Kinta Tin Mines	10/-	.....
Malayan Dredging	25/9xd	—6d
Pahang	10/3	—6d
Pengkalen	8/7½	.....
Petaling	7/7½	.....
Rambutan	15/3	.....
Siamese Tin	6/9	—1½d
Southern Kinta	18/3	.....
S. Malayan	23/3xd	—1/-
S. Tronoh	8/6	.....
Sungei Kinta	10/6	.....
Tekka Taiping	5/1½	+3d
Tronoh	23/9	—1/3
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	16/9	+10½d
Beralt Tin	25/7½	+2/1½
Bisichi	6/10½	+4½d
British Tin Inv.	16/-	—1½d
Ex-Lands Nigeria	3/3	.....
TIN (Nigerian and Miscellaneous) contd.		
Geevor Tin	13/1½	+4½d
Gold & Base Metal	3/3	.....
Jantar Nigeria	9/3	+3d
Jos Tin Area	13/6	.....
Kaduna Prospectors	2/6	+3d
Kaduna Syndicate	2/6	+1½d
London Tin	6/1½	.....
United Tin	3/1½	—1½d
SILVER, LEAD, ZINC		
Broken Hill South	53/1½	+1/4½
Burma Mines	2/3	.....
Consol. Zinc	37/6	+3d
Lake George	8/7½	+2/1½
Mount Isa	43/3xd	+3d
New Broken Hill	28/9	+1/6
North Broken Hill	68/6	+1/9
Rhodesian Broken Hill	13/-	+1/7½
San Francisco Mines	21/6	+2/-
Uruwira	4/4½	—1½d
MISCELLANEOUS BASE METALS & COAL		
Amal. Collieries of S.A.	46/-	.....
Associated Manganese	45/6	+1/-
Cape Asbestos	25/4½	—3d
C.P. Manganese	41/6xd	—2/-
Consol. Murchison	63/3	—6d
Mashaba	3d	.....
Natal Navigation	2⅛	—1/16
Rhod. Monteleo	1/3	.....
Turner & Newall	86/3	—1/9
Wankie	15/-	+7½d
Witbank Colliery	4⅛	+⅛
CANADIAN MINES		
Dome	$30½	+1
Hollinger	$32	—1
Hudson Bay Mining	$91	+3
International Nickel	$86½	—⅛
Mining Corpn. of Canada	£6	+⅛
Noranda	$138	—1
Quemont	£7⅛	+⅛
Yukon	3/6	.....
OIL		
Anglo-Iranian	15⅛	+⅛
Apex	25/-	—9d
Attock	46/3	—7½d
Burmah	93/1½	+7½d
Canadian Eagle	33/6	+1/9
Mexican Eagle	19/9	+7½d
Shell (bearer)	5 1/16	+⅛
Trinidad Leasehold	25/10½	+4½d
T.P.D.	23/1½	+4½d
Ultramar	27/10½	+6d

COMPANY NEWS AND VIEWS

Growing Confidence in Gold Share Market

That O.F.S. and Far West Rand shares have recently been strong markets is not altogether surprising in view of the series of announcements—all carrying their implications veiled or overt of brighter times ahead.

Of special interest amongst these was the new Ofsit financing which involved the granting of the right to the Anglo American Corporation until December, 1957, to take up 625,000 Ofsit shares at 80s. The spotlight has also fallen on Loraine with the announcement of financial arrangements to bring the mine into production by next March at a rate of 100,000 tons per month which exceeds the original capacity by 25,000 tons. These proposals, while involving a considerable reduction in Loraine's outstanding loans, also makes provision for future loan facilities, and involves the subscription by the Anglo American Corporation of 4,953,372 new shares at 20s. per share, together with the grant of a right until December 31, 1957, to subscribe for a further 2,750,000 shares at the same price. The necessary increase in authorized capital involved will be considered by shareholders at Johannesburg on October 5.

Much confidence has undoubtedly been drawn from these two transactions and in view of the present strength of the gold market, their timing could certainly not be criticized. Indeed, in the case of Ofsit's shares which now stand over 83s. 2d., the option price has very swiftly been exceeded, while in the case of Loraine, it would not be unduly optimistic to hope for a price in excess of 20s. in the near future.

The General Mining—Strathmore scheme of amalgamation was passed by shareholders on August 31, and this, of course, means that £822,500 will now be available for the subscription of the shares in Anglo American Group companies contingent on the terms of the deal.

Apart from this, however, is the close association between General Mining and the Corporation which may be expected as an upshot of the merger. Funds, for instance, for the development of the Geoffries' Van den Heeversrust property and arrangements for a public issue of Buffelsfontein shares might easily result from the new partnership. Also, in the news was the new Harmony Gold Mine which has been officially opened after its foundation four years ago, thereby establishing a record for the Orange Free State. And last, but certainly not least, is the news from Freddies Consolidated that of 2,377,081 shares offered to shareholders at 20s. a share in the ratio of 17 new shares for every 100 shares held, a total of 96 per cent were subscribed.

London Tin—Revenue Down—Dividend Up

Group revenue earned by the London Tin Corporation during the year to April 30, 1954, fell to £1,692,280 against £2,202,756 previously. After tax of £805,722, as against £1,098,908 and minority interests, net profit for the year was £511,153 as compared with £588,308 in the preceding period. However, after the increased distribution on the issued capital of £3,618,236 in 4s. shares of 24 per cent as against 22 per cent previously, the carry forward rose to £883,593 from £862,108.

A more detailed account of this company's operations will appear when Mr. J. Ivan Spens, the chairman, has published his statement to shareholders. Meeting, London, October 15.

Stock Exchange Year Book 1954, Vol. II

Volume II of the Stock Exchange Year Book is now available to complete the 1954 edition of this indispensable guide to the full range of securities quoted on the London and Associated Stock Exchanges.

This volume contains the "Mines" and "Commercial, Industrial, etc." sections which together include more than half of all the quoted securities; the combined index to the whole edition; the classified list of quoted commercial companies; and the list of Johannesburg securities in which dealings are permitted. The number of entries in the combined index is about 26,000.

Balance sheets in summarized form are now shown for all companies in the mines, commercial and industrial sections.

The Year Book is published by Thomas Skinner and Co. (Publishers) Ltd., Old Broad Street, London, E.C.2 Price £7 for the two volumes.

The Register of Defunct And Other Companies is also available and gives details for some 500 companies in process of liquidation or dissolution and details of nearly 22,000 companies which formerly appeared in the Year Book. This is also published by Thomas Skinner and Co. at a price of £1 10s.

Amalgamated Anthracite to Make Loan Issue

In his statement to shareholders covering the year ended December 31, 1953, Mr. John Waddell, the chairman of Amalgamated Anthracite Collieries, announced that the company is hoping shortly to make an issue of £300,000 in 5½ per cent loan stock. This money would be used in a part repayment of the parent company's loan of £535,027 and also to provide additional working capital for the group.

The consolidated accounts of the group in respect of the year 1953 show that total revenue declined to a level of £592,638 against £663,311 previously. Group net profit at £186,147 compared with £141,393 in the preceding period and after servicing the preference stock, a dividend of 3 per cent was paid on the issued ordinary capital of £761,379 in 1s. shares as reduced by the recent capital reorganization. This was the first ordinary distribution to be made since 1925. The group balance carried forward was £159,207 against £144,443 previously.

Streamline Filter's Continuing Expansion

Another prosperous year has been completed by Streamline Filters, manufacturers of filters and separators for oil purification, and the twelve months' operations which ended on December 31, 1953, resulted in total group revenue being raised by over 50 per cent over that of the previous period.

Year to Dec. 31	*Total Revenue*	*Taxation*	*Net Profit*	*Dividends*	*To Reserve*	*Carry Forward*
	£	£	£	£	£	£
1953	430,002	332,412	164,900	22,000	15,000	309,653
1952	283,316	193,485	77,989	13,625	10,625	181,753

Dividends of 20 per cent were again paid on the company's issued ordinary capital of £100,000 in 5s. units but in addition to this the previous bonus of 5 per cent was raised to 20 per cent thereby making a total of 40 per cent as compared with 25 per cent for the preceding period.

A satisfactory degree of liquidity is disclosed from the consolidated balance sheet which shows that net current assets exceed net current liabilities including provision for future taxation by £532,900. Cash held was virtually doubled from last year's figure and stood at £624,756 while quoted investments of £4,284 had a market value as at December 31 of £6,215. Mr. C. S. Garland is chairman and managing director.

Climax Drill's Fall in Revenue

The warning contained in Mr. Ralph Ewing's report to shareholders of Climax Rock Drill and Engineering Works last September that trading conditions were becoming difficult, was indeed timely for a considerable drop in revenue has been the outcome of the company's operations during the year to March 31, 1954.

Year to Mar. 31	*Group Revenue*	*Taxation*	*Net* Profit*	*Dividend*	*To Reserve*	*Carry Forward*
	£	£	£	£	£	£
1954	50,135	6,658	3,168	4,950	Nil	11,539
1953	103,003	31,010	26,847	9,900	10,000	23,478

* Excluding £10,157, being adjustments etc. of previous years. (1953 - £1,496).

Dividends amounting to 5½ per cent were paid on the company's issued capital of £300,000 in 5s. ordinary shares thereby marking a decrease from last year's figure of 7½ per cent.

While steady progress towards recovery is being made in Australia, and conditions appear much more hopeful in Canada, it is unfortunate that in South America where no lack of business has been experienced, few purchases can be made due to shortages of sterling. Perhaps the most disturbing point, however, regarding the company's operations is that within South Africa, undoubtedly of primary importance as a customer, serious obstacles are being encountered. Competion in this country is strong and prices are constantly being cut by local manufacturers whose overheads are low in relation to those of other countries. But much effort is being made by the company to undertake local production of specified parts in South Africa in order to deal with this serious threat.

Nevertheless, Mr. Ewing is not pessimistic about the future and it is to be hoped that the re-organizations and economies now in hand will soon restore the situation.

MINE RETURNS—AUGUST

Coal in August

Cumulative figures showing the production of African coal producers up to the end of August reveal that in comparison with the previous corresponding period many declines in production have taken place. Against this, however, is the encouraging feature that new producers such as New Largo and Vierfontein continue to make strides towards their ultimate production levels.

COAL OUTPUT FOR AUGUST

Company	August (in tons)	Months Since Year End	Cumulative Totals (in tons)	
			This year to date	Last year to date
Amal. Coll. of S.A.	575,974	8	4,608,569	5,035,475
Apex	81,371	8	641,806	652,898
Blesbok	43,317	8	359,996	415,895
Coronation	84,412	8	689,675	722,831
Dundee	28,095	8	255,642	293,501
New Largo	87,848	8	644,855	359,718
S.A. Coal Est.	131,277	2	267,714	278,257
Springbok	67,172	8	547,581	585,598
Transvaal & Delagoa	120,060	12	1,417,438	—
Van Dyks Drift	48,421	8	386,142	387,583
Vierfontein	88,734	8	608,297	131,865
Vryheid Cor.	42,152	8	334,626	337,076
Vryheid Cor.*	36,288	8	282,546	291,783
Wankie Coll.	209,777	12	2,443,671	2,460,541
Wankie Coll.*	14,787	12	144,340	147,791
Witbank	122,499	8	1,048,685	1,041,070

* Coke

A report received from Rhodesia refers to the coal production at Wankie which, it says, could be raised to 300,000 tons monthly were it not for difficulties of transportation, which restricts output to a level of 230,000 tons. It is declared that the colliery could produce more than the railways could carry and output is therefore being curtailed to the tonnage which can be moved. Matters are particularly difficult at the moment for the Rhodesian railways faced as they are with the transportation of the year's record maize crop, which must be moved before the rains. But the more basic reason for present difficulties lies in the chronic lack of rolling stock and serious delays in the delivery of large numbers of locomotives, tank cars and wagons.

West African Golds—August

Generally speaking, apart from the fact that, due to rising costs, many companies show declines in profits from last year's corresponding levels, figures for August in respect of the leading West African gold producers cannot be said to be worthy of particular comment.

WEST AFRICAN GOLD RETURNS — AUGUST

Company	August, 1954			Months since year end	Current Financial Year Total to date			Last Financial Year Total to date		
	Tons (000)	Yield (oz.)	Profit (£000)		Tons (000)	Yield (oz.)	Profit (£000)	Tons (000)	Yield (oz.)	Profit (£000)
Amal. Banket	72	11,248	17·1	11	761	120,834	173·0	660	101,738	197·9
Ariston Gold	35	11,975	61·8	11	364	118,737	551·0	317	107,276	484·4
Ashanti	26	16,546	68·1	11	273	174,665	715·5	254	164,778	826·8
Bibiani (1927)	30	6,750	17·6	11	303	70,305	117·1	333	67,871	121·7
Bremang*	624	3,590	15·1	8	3,865	17,876	15·7	4,558	21,258	91·2
G.C.M. Reef	10	4,323	17·4	2	20	8,273	29·8	18	7,169	23·2
Konongo	3	3,239	15·4	11	31	31,754	145·6	27	25,423	118·7
Lyndhurst Deep	1	1,100	5·7	11	11	12,793	62·2	11	11,621	58·1
Marlu Gold	42	3,856	14·4	11	434	41,873	142·3	463	44,995	150·0
T. & Abosso	28	6,031	5·4	5	136	29,549	20·8	124	20,117	59·3

* Cu. yds. dredged. Profit figures include premium revenue.

There are, however, one or two encouraging features in a somewhat unpromising picture and foremost amongst these is the return from Ariston whose production last month reached a record level. Thus the trend of increased profits, which has been established by this mine since the end of its financial year in September 30, 1953, has been well maintained. This improvement in the company's fortunes was, no doubt, partly attributable to the Johnson concentrator which must have gone a considerable way towards reducing costs. Furthermore, when the new winder—which, it is estimated, will bring the mine's production up to 40,000 tons monthly—is brought into commission in a few weeks' time, the company can be expected to get off to a flying start for its coming financial year.

From Bremang also comes the good news that previous losses are now being turned into useful profits. The establishment of the company's No. 1 dredge in its new area, which should be completed in the near future, will do much towards returning to a full recovery in profits. In the meantime, No. 2 dredge, now again in working order after its stoppage, is contributing greatly towards increased profitability.

Indian Gold Returns—August

In terms of output and gold recovery, the three producers on Kolar Gold Fields are making a particularly good showing this year.

INDIAN GOLD RETURNS — AUGUST

Company	August, 1954		Months since year end	Current Financial Year Total to date		Last Financial Year Total to date	
	Tons (000)	Yield (oz.)		Tons (000)	Yield (oz.)	Tons (000)	Yield (oz.)
Champion Reef	16	7,066	8	120	46,667	86	33,874
Mysore	19	6,541	8	143	53,978	124	47,386
Nundydroog*	22	6,367	8	172	49,539	164	45,671
Ooregum†	—	120	8	—	1,052	63	16,743

* Includes tailing.
† Yield from clean up only.

Southern Rhodesian Gold Returns—August

Amongst mine returns for August in respect of Southern Rhodesian producers which are listed in the table below, of particular interest are those from Falcon Mines. And as will immediately be apparent from the cumulative and comparative figures in the table, a considerable rise in both profits and gold recovered has taken place during the current financial year which is now virtually at an end. This is due primarily to the treatment of stockpiled gold concentrates by the company's recently installed fluo-solids roaster.

SOUTHERN RHODESIAN GOLD RETURNS — AUGUST

Company	August, 1954			Months since year end	Current Financial Year Total to date			Last Financial Year Total to date		
	Tons (000)	Yield (oz.)	Profit (£000)		Tons (000)	Yield (oz.)	Profit (£000)	Tons (000)	Yield (oz.)	Profit (£000)
Arcturus	3·0	898	3·2	2	5·9	1,803	6·1	6·2	—	6·6
Cam & Motor	24·0	7,329	40·5	2	48·5	15,052	85·8	48·0	14,575	89·8
Connaught	0·8	386	2·2	2	1·6	640	3·0	1·6	—	3·5
Falcon Mines	17·5	3,208	17·8†	11	186·4	31,250	105·0	166·0	24,898	49·1
Globe & Phoenix	6·2	3,546	23·0	8	48·6	28,833	186·6	48·2	26,946	171·5
Motapa Gold*	17·8	2,480	2·8	8	146·3	19,995	26·6	167·9	19,108	9·2
Muriel Mine	3·1	1,012	10·0	2	6·2	2,006	20·1	1·8	—	11·8
Rezende	6·5	1,060	—	8	52·9	9,246	2·3	52·9	9,367	15·7
Tebekwe	8·0	1,040	1·2	2	16·0	2,022	2·8	16·3	—	5·0

* Excluding premium gold sales.
† Profit includes £6,530 from accumulated concentrates which were re-treated in the roasting unit, also £264 in respect of gold produced during June.

Indeed, since the roaster came into full production last June, 2,217 tons from the stockpiled total of 8,323 tons of concentrates, having an average value of 20 dwt., have now been treated. Moreover, following the completion of the installation of this roaster, the last stage in the opening up of the Dalny mine has been passed, and as forecast by the chairman, Mr. E. B. Papenfus, a dividend was accordingly paid. This distribution, the first payment since 1948, and the third since the company's maiden distribution in 1917, amounted to 10 per cent or 6d. per 5s. share on an issued ordinary capital of £453,903.

Now that the current financial year is virtually complete, profits resulting from the continued treatment of stockpiled concentrates will soon be taken into the 1954/55 accounts. A rough estimate as to what this may mean can be made in that of the original 8,323 tons of concentrates stockpiled, approximately 5,300 tons should remain for treatment at the end of the financial year. This could mean an addition of about £40,000 to next year's profits, on the assumption that extraction costs remain constant.

If, therefore, the company either maintains or improves its milling rate during the coming year, and the overall low-cost structure shows no severe increase, it would not appear to be unduly optimistic to expect a future distribution of something in the region of 20 per cent. This should be possible even after tax, a liability in respect of which should be anticipated next year.

Falcon Mines 5s. shares now stand at around 9s. 9d. at which

price on the estimated dividend of 20 per cent a yield of about 11 per cent would be indicated.

At the Cam and Motor Mine, which has in recent months shown such a marked expansion, although cumulative figures show an improvement in gold recovered, profits have declined presumably due to increased costs. Motapa, however, continues its remarkable increases in profits which have been gaining momentum ever since the beginning of the year.

Australian Gold Returns—August

Western Mining Corporation has announced that it is to participate in a joint exploration for petroleum in Western Australia. The other partners in this venture include Shell interests which will hold 75 per cent, the largest share in the syndicate, Western Mining, which will have 10 per cent, and North Broken Hill and Broken Hill South will hold 7½ per cent each. At present, in the absence of titles for exploration, active operations by the syndicate must await the availability of suitable areas and terms on, and under which, they could be carried out.

AUSTRALIAN GOLD RETURNS — AUGUST

Company	4 weeks to August 10 1954		4weekly period since year-end	Current Financial Year Total to date		Last Financial Year Total to date	
	Tons (000)	Yield (oz.)		Tons (000)	Yield (oz.)	Tons (000)	Yield (oz.)
Boulder Perseverance	10·5	2,751	5	51·3	12,119	50·5	12,050
Central Norseman	12·2	5,687	5	60·6	32,657	59·9	30,958
Golden Horse Shoe	72·3	699	8	615·7	6,861	612·8	6,087
G.Ms of Kalgoorlie	15 5	4,450	5	76·4	21,202	73·7	20,280
Kalgoorlie Enterprise	5·9	1,765	5	28·2	8,335	23·2	6,637
Morning Star	1·4	896	5	6·9	5,054	7·3	8,059
New Coolgardie	5·2	2,539	5	24·0	11,838	26·7	12,416
North Kalgurli	20·1	4,540	8	144·2	35,393	165·3	38,366
Sons of Gwalia	8·9	2,139	8	63·4	14,386	70·7	15,981

FREE STATE DEVELOPMENT AND INVESTMENT CORPORATION, LTD.

Extract from **Mr. D. A. B. Watson's** speech at the Annual General Meeting held on September 9, 1954:—

I have pleasure in submitting for your approval and adoption the directors' report and the audited accounts for the year ended March 31, 1954. These have been in your hands for some time, and there is little that I can add to the information contained therein.

As it appears unlikely that prospecting or drilling operations will be undertaken by your company in the near future on any of the areas in which your company is interested, the services of all your company's employees have been dispensed with, and stores, materials, driling, and other equipment on hand are being disposed of as and when opportunity occurs.

Your company continues to own certain rights to minerals and other rights which will be retained and turned to account if and when the opportunity arises.

It will be noted from the directors' report that the major portion of your company's investments at the close of the financial year comprised its holding of shares and loan stock in Freddies North Lease Area, Limited, and Freddies South Lease Area, Limited.

HOLDING IN FREDDIES CONS.

As stated in the directors' report, these two companies were placed in voluntary liquidation on June 1, 1954, and their assets and liabilities were assumed by Freddies Consolidated Mines, Limited. Shareholders and loan stock holders in Freddies North Lease Area, Limited, and Freddies South Lease Area, Limited, were offered shares in the new company, Freddies Consolidated Mines, Limited, on certain terms.

In respect of its holding of loan stock on May 17, 1954, your company received 171,227 shares in Freddies Consolidated, and in respect of its holding of shares in the two companies on June, 9, 1954, your company received 485,772 shares, making a total of 656,999 shares in that company.

In regard to its new issue, Freddies Consolidated offered to shareholders registered at the close of business on July 23, 1954, the right to subscribe for a total of 2,377,081 shares of £1 each at par in the ratio of 17 new shares for 100 shares held. Your company has accepted the offer of Freddies Consolidated, and has taken up its entitlement.

The offer, which closes tomorrow, September 10, was underwritten by Johannesburg Consolidated Investment Company, Limited, and Anglo-American Coporation of South Africa, Limited.

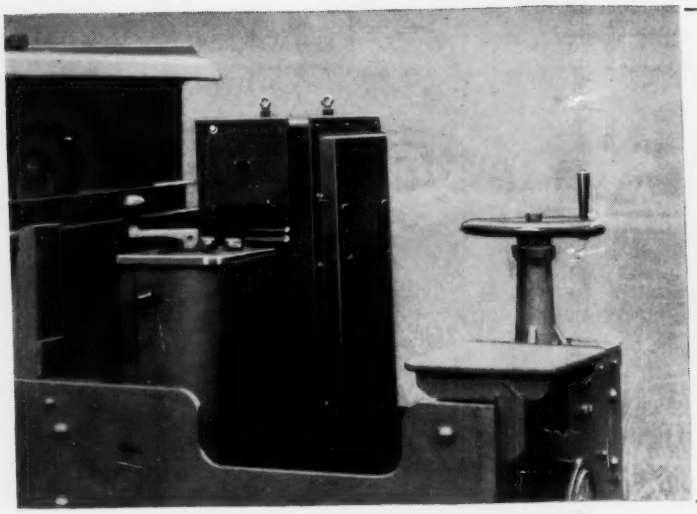
The former company offered your company a 5 per cent participation in the total underwriting of the new issue of Freddies Consolidated, and your directors accepted the offer of the Johannesburg Consolidated Investment Company, Limited.

The rate of development at the amalgamated mine of Freddies Consolidated Mines, Limited, has been increased since the amalgamation was effected, and will, it is expected, be further increased with the object of increasing ore reserves and enabling stoping operations to be carried out on a larger scale. The results of operations subsequent to amalgamation have been as under:

	June	July	Aug.
Tons milled	84,000	86,000	91,000
Yield per ton dwts. ...	3.390	3.446	3.387
Working costs per ton ...	49/-	48/8	46/8
Working losses	£27,044	£23,351	£18,481

During this period the cost of carrying out development in excess of that considered necessary to replace the ore stoped has been charged to capital account.

Metal and Mineral Trades

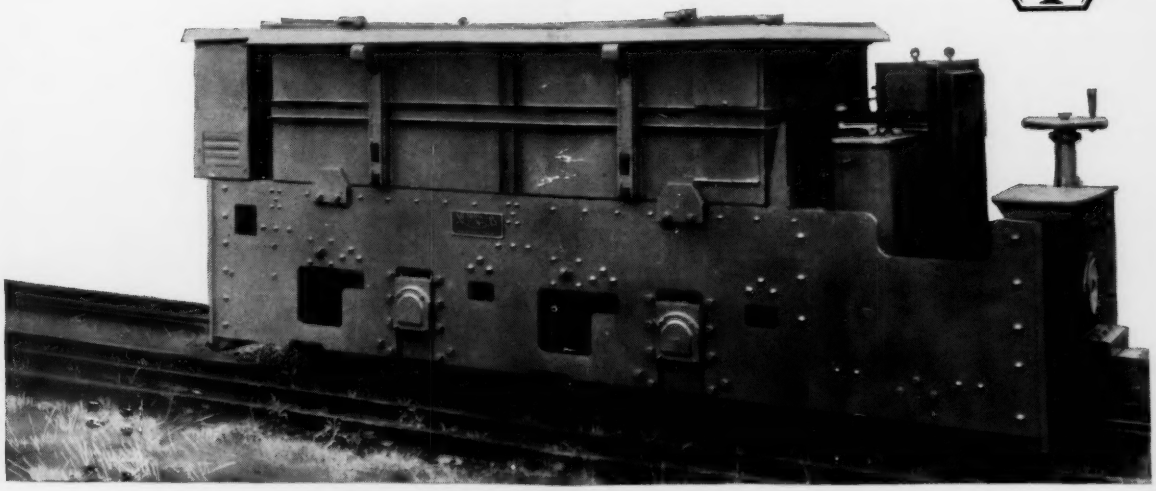


Safe and simple in operation

METROVICK Mining Locomotives

Safety and simplicity of control are important features of the Metrovick range of mining locomotives. For shunting, gathering and general slow-speed haulage on the surface or in the pit, Metrovick equipment provides maximum performance in the minimum space. In the Metrovick range there are twelve different sizes of 2-axle trolley locomotives as well as flameproof and non-flameproof battery locomotives.
Full technical details available on request.

Medium size Metrovick battery locomotive for operation underground or on the surface.



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